

Mr. Kenneth Franklin
UGN, Incorporated
1001 State Street
Chicago Heights, Illinois 60411

Re: Registered Construction and Operation Status,
127-11623-00072

Dear Mr. Franklin:

The application from UGN, Incorporated, received on December 3, 1999, has been reviewed. Based on the data submitted and the provisions in Sections 1 and 2 of 326 IAC 2-1, it has been determined that the following automotive polyurethane foam composite part/ plastic headliner manufacturing plant, located at 2252 Industrial Drive, Valparaiso, Indiana, is classified as registered:

- (a) Fifteen (15) various natural gas-fired heaters, with combined heat input capacity of 15.33 million British Thermal Units per hour (mmBtu/hr).
- (b) Two (2) natural gas-fired air make-up units, with a total heat input capacity of 5.775 mmBtu/hr.
- (c) One (1) new molding cell and existing six (6) molding cells. All seven (7) molding cells consist of forty-four (44) injection mold carriers, with a total production rate of 9,601.2 pounds of molded polyurethane foam insulation per hour. Each cell has two (2) stacks, fourteen (14) stacks total, with flow rates of 5,000 actual cubic feet per minute (acfm) each, except the stacks on cell #3 which has two (2) stacks exhausting 8,500 acfm each). This molding operation also includes mold cleaning, using aerosol mold cleaners.
- (d) One (1) conveyorized adhesive spray line, which is permitted using airless spray gun, capable of spraying 60 headliners per hour.

This adhesive line is modified to use two (2) air atomization robotic spray booths, which is capable of spraying both sides of 60 headliners per hour. It includes use of gun cleaning solvent directed into closed containers for disposal and use of peelable booth coating.
- (e) One (1) laminator press, which has a capability to handle 1.46 x 2.87 meters for the largest part.
- (f) One (1) water jet cutter, which has a capacity of 60 headliners per hour.
- (g) Two (2) 11,000 gallon bulk organic chemical storage tanks.
- (h) Two (2) 6,000 gallon bulk organic chemical storage tanks.
- (i) One (1) cold cleaner located in maintenance department .
- (j) Plant-wide use of cleanup solvents and mold release agents delivered from either aerosol cans or manual spray bottles. Also, use of solvent pumped from one closed container to another to flush adhesive delivery lines.

- (k) One (1) barrier reclaim unit, consisting of two (2) grinders, two (2) cyclones, two (2) fans and one (1) static separator, having a maximum capacity of 550 pounds of scrap material input per hour. This unit contains no emission control equipment.

The following conditions shall be applicable:

D.1.1 Particulate Matter Limitation [326 IAC 6-3]

- (a) Pursuant to 326 IAC 6-3 (Process Operations), the PM emissions overspray from the adhesive spray line shall be limited using the following equation:

$$E = 4.10 P^{0.67}$$

Where: E = PM allowable emissions in pounds per hour

P = Process weight rate in tons per hour

- (b) The dry filters shall always be in place whenever the adhesive spray line is in operation.
- (c) Pursuant to 326 IAC 6-3 (Process Operations), the PM emissions from the Barrier Reclaim process shall be limited to 1.76 pounds per hour. This limit is determined using equation: $E = 4.10 P^{0.67}$

D.1.2 New Source Performance Standards [40 CFR § 60.110b, Subpart Kb - Standards of Performance for Volatile Organic Liquid (VOL) Storage Vessels]

The two (2) 11,000 gallon bulk organic storage tanks are subject to § 60.116b "Monitoring of Operation" of this NSPS, which requires the owner or operator of these storage vessels to keep readily accessible records showing their dimensions and an analysis showing their capacity for the life of the source.

D.1.3 Organic Solvent Degreasing Operations [326 IAC 8-3]

Pursuant to 326 IAC 8-3, the owner or operator of a cold cleaner facility shall:

- (1) equip the cleaner with a cover;
- (2) equip the cleaner with a facility for draining cleaned parts;
- (3) close the degreaser covers whenever parts are not being handled in the cleaner;
- (4) drain cleaned parts for at least fifteen (15) seconds or until dripping ceases;
- (5) provide a permanent, conspicuous label summarizing the operating requirements;
- (6) store waste solvent only in covered container and not dispose of waste solvent or transfer it to another party, in such a manner that greater than twenty percent (20%) of the waste solvent (by weight) can evaporate into the atmosphere.

D.1.4 Volatile Organic Liquid Storage Vessels [326 IAC 8-9]

The two (2) 6,000 gallon bulk organic storage tanks are subject to the reporting and record keeping provisions of section 6(a) and 6(b) of this rule, which requires the owner to keep records showing the vessels identification number; dimensions, and capacity for the life of the source.

D.1.5 Visible Emission Limitations [326 IAC 5-1-2]

Pursuant to 326 IAC 5-1-2 (Visible Emission Limitations) except as provided in 326 IAC 5-1-3 (Temporary Exemptions), the visible emissions shall meet the following:

- (a) visible emissions shall not exceed an average of 40% opacity in 24 consecutive readings.
- (b) visible emissions shall not exceed 60% opacity for more than a cumulative total of 15 minutes (60 readings) in a 6-hour period.

This Registration supersedes all previous exemptions and registrations issued to the source.

An authorized individual shall provide an annual notice to the Office of Air Management that the source is in operation and in compliance with this registration pursuant to 326 IAC 2-5.5-4(a)(3)). The annual notice shall be submitted to:

Compliance Data Section
Office of Air Management
100 North Senate Avenue
P.O. Box 6015
Indianapolis, IN 46206-6015

no later than March 1 of each year, with the annual notice being submitted in the format attached.

Any change or modification which may increase the VOC emissions to 25 tons per year or more from the equipment covered in this registration must be approved by the Office of Air Management (OAM) before such change may occur and will be subject to 326 IAC 2-3, the Emission Offset Rules.

An application or notification shall be submitted in accordance with 326 IAC 2 to the Office of Air Management (OAM) if the source proposes to construct new emission units, modify existing emission units, or otherwise modify the source.

Sincerely,

Paul Dubenetzky, Chief
Permits Branch
Office of Air Management

APD

cc: File -Porter County
Porter County Health Department
Air Compliance - Dave Sampias
Northwest Regional Office
Permit Tracking - Janet Mobley
Air Programs Section- Nancy Landau

Registration Annual Notification

This form should be used to comply with the notification requirements under 326 IAC 2-5.5-4(a)(3)

Company Name:	UGN, Incorporated
Address:	2252 Industrial Drive
City:	Valparaiso
Authorized individual:	Kenneth Franklin
Phone #:	(708) 758-0211
Registration #:	127-11623-00072

I hereby certify that UGN, Incorporated is still in operation and is in compliance with the requirements of Registration 127-11623-00072.

Name (typed):
Title:
Signature:
Date:

Indiana Department of Environmental Management Office of Air Management

Technical Support Document (TSD) for a Registration

Source Background and Description

Source Name: UGN, Incorporated
Source Location: 2252 Industrial Drive, Valparaiso, Indiana
County: Porter
SIC Code: 3714
Registration No.: 127-11623-00072
Permit Reviewer: Aida De Guzman

The Office of Air Management (OAM) has reviewed an application from UGN, Incorporated relating to the modification of the registered plant that manufactures automotive polyurethane foam composite part/plastic headliner. This air approval will incorporate all existing approvals issued to the source.

- (a) Fifteen (15) various natural gas-fired heaters, with combined heat input capacity of 15.33 million British Thermal Units per hour (mmBtu/hr). These heaters were permitted in CP127-6314, issued on September 5, 1996.
- (b) Two (2) natural gas-fired air make-up units, with a total heat input capacity of 5.775 mmBtu/hr. These units were permitted in CP127-8724, issued on August 25, 1997.
- (c) One (1) new molding cell and existing six (6) molding cells. All seven (7) molding cells consist of forty-four (44) injection mold carriers, with a total production rate of 9,601.2 pounds of molded polyurethane foam insulation per hour. Each cell has two (2) stacks, fourteen (14) stacks total, with flow rates of 5,000 actual cubic feet per minute (acfm) each, except the stacks on cell #3 which has two (2) stacks exhausting 8,500 acfm each). This molding operation also includes mold cleaning, using aerosol mold cleaners. The existing molding cells were permitted in CP127-6314, issued on September 5, 1996, amended by CP127-8156, issued on February 26, 1997.
- (d) One (1) conveyORIZED adhesive spray line, which is permitted using airless spray gun, capable of spraying 60 headliners per hour. This line is permitted in CP127-8724, issued on August 25, 1997.

This adhesive line is modified to use two (2) air atomization robotic spray booths, which is capable of spraying both sides of 60 headliners per hour. It includes use of gun cleaning solvent directed into closed containers for disposal and use of peelable booth coating.

- (e) One (1) laminator press, which has a capability to handle 1.46 x 2.87 meters for the largest part. This press is permitted in CP127-8724, issued on August 25, 1997.
- (f) One (1) water jet cutter, which has a capacity of 60 headliners per hour. This cutter was permitted in CP127-8724, issued on August 25, 1997.

- (g) Two (2) 11,000 gallon bulk organic chemical storage tanks, which are permitted in CP127-7370, issued on January 24, 1997.
- (h) Two (2) 6,000 gallon bulk organic chemical storage tanks, which are permitted in CP127-7370, issued on January 24, 1997.
- (i) One (1) cold cleaner located in maintenance department. This was included in the application for CP127-6314, but was unaccountably missing from the registration.
- (j) Plant-wide use of cleanup solvents and mold release agents delivered from either aerosol cans or manual spray bottles. Also, use of solvent pumped from one closed container to another to flush adhesive delivery lines.
- (k) One (1) barrier reclaim unit, consisting of two (2) grinders, two (2) cyclones, two (2) fans and one (1) static separator, having a maximum capacity of 550 pounds of scrap material input per hour. This unit contains no emission control equipment.

Stack Summary

Stack ID	Operation	Height (feet)	Diameter (feet)	Flow Rate (acfm)	Temperature (°F)
Mold Cell #7 2 stacks	Mold Cell #7	33	2 each 0.5	5,000 each	room temperature

Recommendation

The staff recommends to the Commissioner that the construction and operation be approved. This recommendation is based on the following facts and conditions:

Unless otherwise stated, information used in this review was derived from the application and additional information submitted by the applicant.

A complete application for the purposes of this review was received on December 3, 1999.

Emission Calculations

- (a) Natural Gas Combustion: See Pages 1 and 2 of the TSD Appendix A
- (b) Seven Molding Cells Emissions:
Pursuant to CP 127-6314, issued on September 5, 1996, the emission factor (Ef) of 0.0033 lb VOC/ton polyurethane foam used in the emission calculations was based from testing done by the company.

$$\begin{aligned}\text{VOC} &= 9,601.2 \text{ lb/hr} * \text{ton}/2000 \text{ lb} * 0.0033 \text{ lb/ton} * 8760 \text{ hr/yr} * \text{ton}/2000 \text{ lb} \\ &= 0.07 \text{ ton/year}\end{aligned}$$

- (c) Conveyorized Adhesive Spray Line Emissions:

Based on an engineering prototype testing of the new system and the existing system. VOC emissions have three components. First, there is a very small amount of Methyl Diisocyanate (MDI) evaporated. The second component is the evaporating of dibasic ester during the purge operation. The last component is the peelable wall coating, used for housekeeping purposes. This material was not used during the tests and will be added to the emissions measured during the tests.

- (1) MDI Emissions: - The emission calculation was based on the guide published by the Society of the Plastic Industry:

The spray line uses an adhesive called polyurethane foam applied to the plastic headliners. This material is a mixture of 45% Methyl Diisocyanate (MDI) and 55% polymerized MDI (PMDI). **MDI is a VOC and a hazardous air pollutant (HAP).**

Given:

Largest part area to be sprayed = 1.46 m x 2.87 m

Rate of adhesive application = 60 grams/square meter

Maximum production rate = 60 parts/hr

"Tack free" temperature = 160 °F, time that no more unreacted MDI is present in the adhesive polyurethane foam

"Tack free" (μ) across coated surfaces in 3 meters/sec

$$W = \frac{(25.4)(P_T^{\circ})(M_T)(\mu^{0.78})(A)}{T}$$

Where:

W = the evaporation rate in grams/second
 P_T° = the vapor pressure in atmosphere
 M_T = average molecular weight (for MDI: $M_T = 250$)
 T = temperature in degrees Kelvin
 μ = air speed across curing foam in M/sec
 A = is exposed area in square meters

$$W = \frac{(25.4)(P_T^{\circ})(M_T)(\mu^{0.78})(A)}{T}$$

$$P_T^{\circ} = \frac{(VP \text{ mmHg})}{\text{barometric pressure}} = \frac{1 \times 10^{-3}}{760} = 1.3 \times 10^{-6}$$

$VP = 1 \times 10^{-3}$
barometric pressure = 760 mmHg

Adhesive is applied on both sides of the largest part area:

$$A = 2 (1.46 \text{ meter}) (2.87 \text{ meter}) = 8.38 \text{ M}^2$$

$$T = 160^{\circ}\text{F} = 70^{\circ}\text{C} = 343^{\circ}\text{K}$$

$$W = \frac{(25.4)(P_T^{\circ})(M_T)(\mu^{0.78})(A)}{T} = \frac{(25.4)(1.3 \times 10^{-6})(250)(3^{0.78})(8.38)}{343} = 0.00048 \text{ gram/sec}$$

$$\text{VOC Emissions} = (0.00048 \text{ gram/sec}) (60 \text{ sec/min}) (1 \text{ min/part}) = 0.029 \text{ gram per part (This emission is both for MDI \& PMDI)}$$

$$\text{MDI} = 45\% \text{ PMDI} = 55\%$$

$$\begin{aligned} \text{MDI Emissions} &= (0.029 \text{ gram/part}) * (45\%/100) * (60 \text{ parts/hr}) * (\text{lb}/454 \text{ grams}) * (8760 \text{ hr/yr}) \\ &= 0.01 \text{ ton/yr} \\ &= 0.002 \text{ lb/hr} \end{aligned}$$

Tests data shows total VOC emissions rate of 0.14 lb/hr for prototype test at 38.7 parts/hr and prorates to 0.22 lb/hr for proposed rate of 60 parts/hour.

(2) Dibasic Ester Emissions - No component of this solvent mixed used, is one of the listed HAPs.

(3) Peelable Wall Coating Emissions - The peelable wall coating called 30-FT will be applied intermittently in order to remove built up adhesive from the booth. The maximum amount of this material contains prorated per piece is 0.0009 gal/piece. The MSDS shows that this material contains 1.5 lb/gal VOC. It is applied with a HVLP gun. The VOC emission is calculated as follows:

$$\begin{aligned}\text{VOC Emission} &= 0.0009 \text{ gal/piece} * 1.5 \text{ lb VOC/gal} * 60 \text{ pieces per hour} \\ &= 0.081 \text{ lb/hr}\end{aligned}$$

$$\begin{aligned}\text{Conveyorized Adhesive Spray Line Total VOC Emissions} &= 0.22 \text{ lb/hr} + 0.081 \text{ lb/hr} \\ &= 0.30 \text{ lb/hr} * 8760 \text{ hr/yr} \\ &\quad * \text{ton/2000 lb} \\ &= 1.3 \text{ ton/yr}\end{aligned}$$

Conveyorized Adhesive Spray Line Total PM Emissions: From the test data the average PM emissions (prorated from 38.7 parts/hour to 60 parts/hour) is 2.45 lb/hr from the two booths.

$$\begin{aligned}\text{PM Emissions Uncontrolled} &= 2.45 \text{ lb/hr} * 8760 \text{ hr/yr} * \text{ton/2000 lb} \\ &= 10.7 \text{ ton/yr}\end{aligned}$$

$$\begin{aligned}\text{PM Emissions Controlled} &= 0.37 \text{ lb/hr} * 8760 \text{ hr/yr} * \text{ton/2000 lb} \\ &= 1.6 \text{ ton/yr}\end{aligned}$$

(d) Trim Press:
There are no PM emissions from this process.

(e) Lamination Press:
Plastic sheet is used in the lamination process, which does not involve heating. The plastic is mechanically crimped into the product and no VOC nor PM is emitted.

(f) Barrier Reclaim Process Emissions:

The scrap material first goes through the grinders. Material from the grinders is mostly a loose granular material, the average granule size is about a millimeter across, but it has a certain amount of dry powdery residue sticking to the surface of the granules. The material taken from the grinder was analyzed for it size, as follows:

Particles < 10 microns:	0.02% by weight
Particles < 100 microns:	0.16% by weight
Particles > 100 microns:	99.84% by weight

Since particles having diameter of greater than 100 microns are not considered to be particulate matter, they will not be further considered in this calculations.

This process has two cyclones associated with it. These cyclones separate the "powder" from the larger granules, directing the powder into a hopper for collection and disposal. The larger granules are then separated for reclamation at another plant or disposal at the landfill. Since the larger particles are the output of this process, only part of the smaller particles that penetrate the cyclones can be considered as part of the potential emission.

Cyclone Efficiency :
10 microns < diameter < 100 microns (PM): 50%
Diameter <10 microns (PM10): 1%

Emission from the First Cyclone:
 $PM = 550 \text{ lb/hr} * 0.16\% * 50\% = 0.44 \text{ lb/hr}$

$PM10 = 550 \text{ lb/hr} * 0.02\% * 99\% = 0.11 \text{ lb/hr}$

Emission from the Second Cyclone:
 $PM = 225 \text{ lb/hr} * 0.16\% * 50\% * 50\% = 0.09 \text{ lb/hr}$

$PM10 = 225 \text{ lb/hr} * 0.02\% * 99\% * 99\% = 0.04 \text{ lb/hr}$

Total Emission:
 $PM = 0.44 \text{ lb/hr} + 0.09 \text{ lb/hr} = 0.53 \text{ lb/hr} * 8760 \text{ hr/yr} * \text{ton}/2000 \text{ lb}$
 $= 2.3 \text{ ton/yr}$

$PM10 = 0.11 \text{ lb/hr} + 0.04 \text{ lb/hr} = 0.15 \text{ lb/hr} * 8760 \text{ hr/yr} * \text{ton}/2000 \text{ lb}$
 $= 0.7 \text{ ton/yr}$

- (g) Parts Washer Emission:
Worst case or maximum solvent usage per day is 1 gallon

$VOC \text{ Emission} = 1 \text{ gal/day} * 6.54 \text{ lb/gal} * 100\% \text{ VOC} * 100\% \text{ flash off} * 365 \text{ days/yr}$
 $* \text{ton}/2000 \text{ lb}$
 $= 1.2 \text{ ton/yr}$

Washer solvent used contains none of the listed HAPs.

- (h) Miscellaneous Product Usages:

(1) General Purpose Adhesive -
Density 6.67 lb/gal
Maximum Usage Rate: 0.036 gal/hr
VOC Content: 80% by weight
Solids Content: 10% by weight
HAP Content: 30% hexane by weight

$VOC \text{ Emission} = 0.036 \text{ gal/hr} * 6.67 \text{ lb/gal} * 80\% * 100\% \text{ flash off}$
 $= 0.19 \text{ lb/hr} * 8760 \text{ hr/yr} * \text{ton}/2000 \text{ lb}$
 $= 0.84 \text{ ton/yr}$

$Hexane \text{ Emission} = 0.036 \text{ gal/hr} * 6.67 \text{ lb/gal} * 30\% * 100\% \text{ flash off}$
 $= 0.07 \text{ lb/hr} * 8760 \text{ hr/yr} * \text{ton}/2000 \text{ lb}$
 $= 0.31 \text{ ton/yr}$

$PM \text{ Emission} = 0.036 \text{ gal/hr} * 6.67 \text{ lb/gal} * (1\text{-wt \% VOC, 80\%}) * (1\text{-transfer eff., 75\%}) *$
 $8760 \text{ hr/yr} * \text{ton}/2000 \text{ lb}$
 $= 0.05 \text{ ton/yr}$

(2) SD20 Cleaner:
Density 8.34 lb/gal
Maximum Usage Rate: 0.046 gal/hr
VOC Content: 91% by weight

Solids Content: 1% by weight

$$\begin{aligned}\text{VOC Emission} &= 0.046 \text{ gal/hr} * 8.34 \text{ lb/gal} * 91\% \text{ VOC} * 100\% \text{ flash off} * 8760 \text{ hr/yr} \\ &\quad * \text{ton/2000 lb} \\ &= 1.5 \text{ ton/yr}\end{aligned}$$

$$\begin{aligned}\text{PM Emission} &= 0.046 \text{ gal/hr} * 8.34 \text{ lb/gal} * (1\text{-wt \% VOL, 91\%}) * (1\text{-transfer eff.,} \\ &\quad 75\%) * 8760 \text{ hr/yr} * \text{ton/2000 lb} \\ &= 0.04 \text{ ton/yr}\end{aligned}$$

- (3) L-219W Water Based Mold Release
- | | |
|---------------------|---------------|
| Density | 8.34 lb/gal |
| Maximum Usage Rate: | 0.056 gal/hr |
| VOC Content: | 0% by weight |
| Solids Content: | 10% by weight |
| Weight % Volatiles | 90% |

$$\begin{aligned}\text{PM Emission} &= 0.056 \text{ gal/hr} * 8.34 \text{ lb/gal} * (1\text{-wt \% VOL, 90\%}) * (1\text{-transfer eff.,} \\ &\quad 75\%) * 8760 \text{ hr/yr} * \text{ton/2000 lb} \\ &= 0.05 \text{ ton/yr}\end{aligned}$$

- (4) L-239W Water Based Mold Release
- | | |
|---------------------|---------------|
| Density | 8.34 lb/gal |
| Maximum Usage Rate: | 0.199 gal/hr |
| VOC Content: | 0% by weight |
| Solids Content: | 10% by weight |
| Weight % Volatiles | 90% |

$$\begin{aligned}\text{PM Emission} &= 0.199 \text{ gal/hr} * 8.34 \text{ lb/gal} * (1\text{-wt \% VOL, 90\%}) * (1\text{-transfer eff.,} \\ &\quad 75\%) * 8760 \text{ hr/yr} * \text{ton/2000 lb} \\ &= 0.18 \text{ ton/yr}\end{aligned}$$

- (5) L-319W Water Based Mold Release
- | | |
|---------------------|---------------|
| Density | 8.34 lb/gal |
| Maximum Usage Rate: | 6.94 gal/hr |
| VOC Content: | 0% by weight |
| Solids Content: | 15% by weight |
| Weight % Volatiles | 85% |

$$\begin{aligned}\text{PM Emission} &= 6.94 \text{ gal/hr} * 8.34 \text{ lb/gal} * (1\text{-wt \% VOL, 85\%}) * (1\text{-transfer eff.,} \\ &\quad 75\%) * 8760 \text{ hr/yr} * \text{ton/2000 lb} \\ &= 9.5 \text{ ton/yr}\end{aligned}$$

- (6) Adhesive Line Cleaner:
This "adhesive line cleaner" solvent is being pumped from one closed container to another through the piping and tubing it is used to clean. The solvent is re-used numerous times until it is saturated with adhesive at which time the saturated solvent is disposed of or re-fined. An identical operation in another state manifests away for disposal 95% of the original mass of solvent.

Density	7.5 lb/gal
Maximum Usage Rate:	0.125 gal/hr
VOC Content:	100% by weight
Solids Content:	0% by weight

$$\begin{aligned}\text{VOC Emission} &= 0.125 \text{ gal/hr} * 7.50 \text{ lb/gal} * 100\% \text{ VOC} * 5\% \text{ flash off} * \\ &\quad 8760 \text{ hr/yr} * \text{ton/2000 lb} \\ &= 0.2 \text{ ton/yr}\end{aligned}$$

- (7) Mold Cleaner:
VOC Emission = 0.134 gal/hr * 8.34 lb/gal * 0.77 S.G.
= 0.86 lb/hr * 8760 hr/yr * ton/2000 lb
= 3.8 ton/yr

SUMMARY OF EMISSIONS (TON/YR)								
Pollutant	Natural Gas Combustion	Mold Cells	Adhesive Spray Line Uncontrolled Controlled		Barrier Reclaim	Parts Washer	Miscellaneous Product Usage	TOTAL EMISSIONS
PM	0.1		10.7	1.6	2.3		9.82	22.92
PM10	0.5		10.7	1.6	0.7		9.82	21.72
VOC	0.5	0.07	1.3			1.2	6.34	9.41
CO	7.7							7.7
NOx	9.2							9.2
SO2	0.0							0.0
MDI	0.0		0.01					0.01
Hexane	0.0						0.31	0.31

Potential To Emit

Pursuant to 326 IAC 2-1.1-1(16), Potential to Emit is defined as “the maximum capacity of a stationary source or emissions unit to emit any air pollutant under its physical and operational design. Any physical or operational limitation on the capacity of a source to emit an air pollutant, including air pollution control equipment and restrictions on hours of operation or type or amount of material combusted, stored, or processed shall be treated as part of its design if the limitation is enforceable by the U. S. EPA, the department, or the appropriate local air pollution control agency.”

Pollutant	Potential To Emit (tons/year)
PM	22.61
PM-10	21.72
SO ₂	0.0
VOC	9.41
CO	7.7
NO _x	9.2

HAP's	Potential To Emit (tons/year)
Methyl Diisocyanate	0.01
Hexane	0.31
TOTAL	0.32

- (a) The potential to emit (as defined in 326 IAC 2-7-1(29)) of volatile organic compounds (VOC) are less than 25 tons per year, for source located in Porter County, which is severe nonattainment for ozone. Therefore, the source is not subject to the provisions of 326 IAC 2-7, and Emission Offset Rules 326 IAC 2-3.

or

- (b) The potential to emit (as defined in 326 IAC 2-7-1(29)) of any single HAP is equal to or less than ten (10) tons per year and the potential to emit (as defined in 326 IAC 2-7-1(29)) of a combination HAPs is less than twenty-five (25) tons per year. Therefore, the source is not subject to the provisions of 326 IAC 2-7.

Justification for the Level of Approval

The source is re-permitted, based on the new permitting rules requirements, 326 IAC 2-1.1. All the air permits issued to the source are superseded by this proposed air approval.

Pursuant to 326 IAC 2-5.1-2, the source will be issued a Registration, since the potential to emit (PTE) plantwide of Particulate Matter (PM), and Particulate Matter less than 10 microns (PM₁₀) are each greater than 5 tons per year but less than 25 tons per year (see PTE on page 7 of this TSD).

Limited Potential to Emit

The table below summarizes the total potential to emit, reflecting all limits, of the significant emission units.

	Limited Potential to Emit (tons/year)						
Process/facility	PM	PM-10	SO ₂	VOC	CO	NO _x	HAPs
Natural Gas Combustion	0.1	0.5	0.0	0.5	7.7	9.2	0.0
Mold Cells	-	-	-	0.07	-	-	-
Adhesive Spray Line	10.7	10.7	-	1.3	-	-	0.01
Barrier Reclaim	2.3	0.7	-	-	-	-	-
Parts Washer	-	-	-	1.2	-	-	-
Miscellaneous Product Usage	9.82	9.82	-	6.34	-	-	0.31
Total Emissions	22.61	21.72	0.0	9.41	7.7	9.2	0.32

County Attainment Status

The source is located in Porter County.

Pollutant	Status (attainment, maintenance attainment, or unclassifiable; severe, moderate, or marginal nonattainment)
PM-10	unclassifiable
SO ₂	unclassifiable
NO ₂	severe
Ozone	severe
CO	attainment
Lead	not determined

- (a) Volatile organic compounds (VOC) and oxides of nitrogen are precursors for the formation of ozone. Therefore, VOC and NO_x emissions are considered when evaluating the rule applicability relating to the ozone standards. Porter County has been designated as severe nonattainment for ozone. Therefore, VOC and NO_x emissions were reviewed pursuant to the requirements for Emission Offset, 326 IAC 2-3.
- (b) Porter County has been classified as attainment for all the other criteria pollutants. Therefore, these emissions were reviewed pursuant to the requirements for the Prevention of Significant Deterioration (PSD), 326 IAC 2-2.

Source Status

New Source PSD Definition (emissions after controls, based on 8,760 hours of operation per year at rated capacity and/ or as otherwise limited):

Pollutant	Emissions (ton/yr)
PM	22.61
PM10	12.62
SO ₂	0.0
VOC	9.41
CO	7.7
NO _x	9.2
Single HAP	0.01
Combination HAPs	0.32

- (a) This new source is **not** a major stationary source because VOC or NO_x both severe nonattainment pollutant are not emitted at a rate of 25 tons per year or greater. Therefore, pursuant to 326 IAC 2-3, the Emission Offset requirements do not apply.

and

- (b) This new source is **not** a major stationary source because PM, PM10, SO₂, and CO, all attainment pollutant are not emitted at a rate of 250 tons per year or greater and it is not in one of the 28 listed source categories. Therefore, pursuant to 326 IAC 2-2, and 40 CFR 52.21, the PSD requirements do not apply.

Part 70 Permit Determination

326 IAC 2-7 (Part 70 Permit Program)

This new source is not subject to the Part 70 Permit requirements because the potential to emit (PTE) of:

- (a) each criteria pollutant is less than 100 tons per year,
- (b) a single hazardous air pollutant (HAP) is less than 10 tons per year, and
- (c) any combination of HAPs is less than 25 tons/year.

This is the first air approval issued to this source.

Federal Rule Applicability

- (a) New Source Performance Standards (NSPS)
40 CFR Part 60.110b, Subpart Kb - Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Storage Vessels) for which Construction, Reconstruction or Modification Commenced after July 23, 1984.

Section (a) of this NSPS applies to VOL vessels, with a capacity greater than or equal to 40 cubic meters (m³) (10,567 gallons).

- (1) The two (2) 6,000 gallon bulk organic storage tanks are **not subject** to this NSPS, because their capacity are less than 40 cubic meters (m³) (10,567 gallons).
- (2) The two (2) 11,000 gallon bulk organic storage tanks **are subject** to this NSPS, because their capacity are greater than 40 cubic meters (m³) (10,567 gallons), but less than 75 cubic meters (19,813 gallons). They are subject to the "Monitoring of Operation" requirement of Part 60.116b(b). This rule requires the owner or operator of these storage vessels to keep readily accessible records showing their dimensions and an analysis showing their capacity for the life of the source.

There are no other New Source Performance Standards (326 IAC 12) and 40 CFR Part 63 applicable to this facility.

- (b) National Emission Standards for hazardous Air Pollutants
There are no NESHAPs that will apply to this facility nor any NESHAP scheduled to be promulgated that will apply to this facility.

State Rule Applicability

- (a) 326 IAC 2-3 (Emission Offset)
The source is not subject to this rule, because its severe nonattainment pollutant, NOx and VOC, are emitted at less than 25 tons per year.
- (b) 326 IAC 2-6 (Emission Reporting)
This facility **is not subject** to 326 IAC 2-6 (Emission Reporting), because the source, which is located in Porter County emits less than 10 tons/yr of VOC.
- (c) 326 IAC 8-1-6 (General Reduction Requirements)
The adhesive spray line, is not be subject to this rule, because its total VOC emissions of 1.3 tons/year is well below the 25 tons/year.
- (d) 326 IAC 8-7 (Specific VOC Reduction Requirements For Lake, Porter, Clark, and Floyd Counties). This rule applies to sources located in these counties that have the potential to emit (PTE) VOC at levels equal to or greater than 25 tons per year. This rule shall also apply to sources that have coating facilities which emit or have the PTE of 10 tons of VOC per year or greater.

The source has no PTE of 25 tons per year of VOC, and although it has a coating facility (adhesive line), this facility does not have a PTE of 10 tons of VOC per year. The rule therefore, is not applicable to the source.

- (e) 326 IAC 8-6-1 (Organic Solvent Emission Limitation)
The proposed facilities do not emit potential VOC emissions of 100 ton per year. Therefore, this rule does not apply.
- (f) 326 IAC 8-9 (Volatile Organic Storage Vessels)
This rule applies to stationary vessels used to store volatile organic liquid (VOL) that are located in Clark, Floyd, Lake or Porter County, and with a capacity less than thirty-nine thousand (39,000) gallons, and with a capacity equal to or greater than thirty-nine thousand (39,000) gallons, that store a VOL with a maximum true vapor pressure equal to or greater than five-tenths (0.5) pounds per square inch absolute (psia) but less than seventy-five hundredths psia.
 - (1) This rule is not applicable to the two (2) 11,000 gallon bulk organic storage tanks, because they are subject to 40 CFR 60, Subpart Kb, New Source Performance Standards for VOL storage. Being subject to this NSPS, exempts these tanks from being subject to the requirements of 326 IAC 8-9 (see section 2 of this rule).
 - (2) The two (2) 6,000 gallon bulk organic storage tanks are subject to the reporting and record keeping provisions of section 6(a) and 6(b) of this rule. This rule requires the owner to keep records showing the vessels identification number; dimensions, and capacity for the life of the source.
- (g) No other 8 rule will apply to these facilities because they do not fit any of the processes described in 326 IAC 8.

(h) 326 IAC 6-3 (Particulate Matter)

- (1) The PM overspray from the adhesive spray line will be determined using the following equation:

$$E = 4.10 P^{0.67}$$

Where:

E = PM emission limit in pounds per hour (lb/hr)

P = Process weight rate in ton/hour

The dry filters are used to comply with 326 IAC 6-3.

- (2) The Barrier Reclaim process is subject to this rule, 326 IAC 6-3. This rule limits the PM emissions using the following equation:

$$\begin{aligned} E &= 4.10 P^{0.67} \\ &= 4.19 (0.275)^{0.67} \\ &= 1.76 \text{ lb/hr} \end{aligned}$$

This process is in compliance since its PM emission of 0.53 lb/hr is less than the allowable.

(h) 326 IAC 8-3: (Organic Solvent Degreasing Operations)

This rule applies to any facility, construction of which commences after January 1, 1980, performing solvent degreasing operations located anywhere in the state.

The parts washer, which is a cold cleaner with remote reservoir is subject to Section 2 of this rule, since it should have been constructed in 1996, because it was part of the facilities in Registration 127-6314, issued in 1996.

The owner or operator of a cold cleaner facility shall:

- (1) equip the cleaner with a cover;
- (2) equip the cleaner with a facility for draining cleaned parts;
- (3) close the degreaser covers whenever parts are not being handles in the cleaner;
- (4) drain cleaned parts for at least fifteen (15) seconds or until dripping ceases;
- (5) provide a permanent, conspicuous label summarizing the operating requirements;
- (6) store waste solvent only in covered container and not dispose of waste solvent or transfer it to another party, in such a manner that greater than twenty percent (20%) of the waste solvent (by weight) can evaporate into the atmosphere.

- (i) 326 IAC 6-2 (Indirect Heating Facility)
The various natural gas-fired heaters are not subject to this rule, because they are not sources of indirect heating. This reverses the determination made in Registration 127-6314, issued on September 5, 1996.
- (j) 326 IAC 2-4.1-1 (New Source Toxic Control)
This rule is not applicable to the source, because it is not major for single or combined HAPs.

Air Toxic Emissions

Indiana presently requests applicants to provide information on emissions of the 189 hazardous air pollutants set out in the Clean Air Act Amendments of 1990. These pollutants are either carcinogenic or otherwise considered toxic and are commonly used by industries. They are listed as air toxics on the Office of Air Management (OAM) Construction Permit Application Form Y.

- (a) This modification will emit levels of air toxics less than those which constitute a major source according to Section 112 of the 1990 Amendments to Clean Air Act.
- (b) See page 3 of this TSD for the detailed air toxic emission calculations.

Conclusion

The modification of the plant which manufacture automotive polyurethane foam composite part/plastic headliner will be subject to the conditions of the attached proposed **Registration 127-11623-00072**.

Appendix A: Emissions Calculations
Natural Gas Combustion Only
MM BTU/HR <100
Small Industrial Boiler

Company Name: UGN, Incorporated
Address City: 2252 Industrial Dr., Valparaiso, IN
Registration: 127-11623
Pit ID: 127-00072
Reviewer: Aida De Guzman
Date: Dec. 9, 1999

Various nat. gas-fired heaters
w/ total heat input capacity
of 15.33 mmBtu/hr

Heat Input Capacity
MMBtu/hr

Potential Throughput
MMCF/yr

15.3

134.3

Pollutant						
Emission Factor in lb/MMCF	PM* 1.9	PM10* 7.6	SO2 0.6	NOx 100.0 **see below	VOC 5.5	CO 84.0
Potential Emission in tons/yr	0.1	0.5	0.0	6.7	0.4	5.6

*PM emission factor is filterable PM only. PM10 emission factor is filterable and condensable PM10 combined.

**Emission Factors for NOx: Uncontrolled = 100, Low NOx Burner = 50, Low NOx Burners/Flue gas recirculation = 32

Methodology

All emission factors are based on normal firing.

MMBtu = 1,000,000 Btu

MMCF = 1,000,000 Cubic Feet of Gas

Potential Throughput (MMCF) = Heat Input Capacity (MMBtu/hr) x 8,760 hrs/yr x 1 MMCF/1,000 MMBtu

Emission Factors are from AP 42, Chapter 1.4, Tables 1.4-1, 1.4-2, 1.4-3, SCC #1-02-006-02, 1-01-006-02, 1-03-006-02, and 1-03-006-03 (SUPPLEMENT D 3/98)

Emission (tons/yr) = Throughput (MMCF/yr) x Emission Factor (lb/MMCF)/2,000 lb/ton
above
emission

Appendix A: Emissions Calculations
Natural Gas Combustion Only
MM BTU/HR <100
Small Industrial Boiler

Company Name: UGN, Incorporated
Address: 2252 Industrial Dr., Valparaiso, IN
Registration: 127-11623
Pit ID: 127-00072
Reviewer: Aida De Guzman
Date: Dec. 9, 1999

2 air make-up units w/ total heat
input capacity of 5.775 mmBtu/hr

Heat Input Capacity
MMBtu/hr

Potential Throughput
MMCF/yr

5.8

50.6

Pollutant						
Emission Factor in lb/MMCF	PM* 1.9	PM10* 7.6	SO2 0.6	NOx 100.0 **see below	VOC 5.5	CO 84.0
Potential Emission in tons/yr	0.0	0.2	0.0	2.5	0.1	2.1

*PM emission factor is filterable PM only. PM10 emission factor is filterable and condensable PM10 combined.

**Emission Factors for NOx: Uncontrolled = 100, Low NOx Burner = 50, Low NOx Burners/Flue gas recirculation = 32

Methodology

All emission factors are based on normal firing.

MMBtu = 1,000,000 Btu

MMCF = 1,000,000 Cubic Feet of Gas

Potential Throughput (MMCF) = Heat Input Capacity (MMBtu/hr) x 8,760 hrs/yr x 1 MMCF/1,000 MMBtu

Emission Factors are from AP 42, Chapter 1.4, Tables 1.4-1, 1.4-2, 1.4-3, SCC #1-02-006-02, 1-01-006-02, 1-03-006-02, and 1-03-006-03 (SUPPLEMENT D 3/98)

Emission (tons/yr) = Throughput (MMCF/yr) x Emission Factor (lb/MMCF)/2,000 lb/ton
above
emission

Indiana Department of Environmental Management Office of Air Management

Technical Support Document (TSD) for a Registration

Source Background and Description

Source Name: UGN, Incorporated
Source Location: 2252 Industrial Drive, Valparaiso, Indiana
County: Porter
SIC Code: 3714
Registration No.: 127-11623-00072
Permit Reviewer: Aida De Guzman

The Office of Air Management (OAM) has reviewed an application from UGN, Incorporated relating to the modification of the registered plant that manufactures automotive polyurethane foam composite part/plastic headliner. This air approval will incorporate all existing approvals issued to the source.

- (a) Fifteen (15) various natural gas-fired heaters, with combined heat input capacity of 15.33 million British Thermal Units per hour (mmBtu/hr). These heaters were permitted in CP127-6314, issued on September 5, 1996.
- (b) Two (2) natural gas-fired air make-up units, with a total heat input capacity of 5.775 mmBtu/hr. These units were permitted in CP127-8724, issued on August 25, 1997.
- (c) One (1) new molding cell and existing six (6) molding cells. All seven (7) molding cells consist of forty-four (44) injection mold carriers, with a total production rate of 9,601.2 pounds of molded polyurethane foam insulation per hour. Each cell has two (2) stacks, fourteen (14) stacks total, with flow rates of 5,000 actual cubic feet per minute (acfm) each, except the stacks on cell #3 which has two (2) stacks exhausting 8,500 acfm each). This molding operation also includes mold cleaning, using aerosol mold cleaners. The existing molding cells were permitted in CP127-6314, issued on September 5, 1996, amended by CP127-8156, issued on February 26, 1997.
- (d) One (1) conveyORIZED adhesive spray line, which is permitted using airless spray gun, capable of spraying 60 headliners per hour. This line is permitted in CP127-8724, issued on August 25, 1997.

This adhesive line is modified to use two (2) air atomization robotic spray booths, which is capable of spraying both sides of 60 headliners per hour. It includes use of gun cleaning solvent directed into closed containers for disposal and use of peelable booth coating.

- (e) One (1) laminator press, which has a capability to handle 1.46 x 2.87 meters for the largest part. This press is permitted in CP127-8724, issued on August 25, 1997.
- (f) One (1) water jet cutter, which has a capacity of 60 headliners per hour. This cutter was permitted in CP127-8724, issued on August 25, 1997.

- (g) Two (2) 11,000 gallon bulk organic chemical storage tanks, which are permitted in CP127-7370, issued on January 24, 1997.
- (h) Two (2) 6,000 gallon bulk organic chemical storage tanks, which are permitted in CP127-7370, issued on January 24, 1997.
- (i) One (1) cold cleaner located in maintenance department. This was included in the application for CP127-6314, but was unaccountably missing from the registration.
- (j) Plant-wide use of cleanup solvents and mold release agents delivered from either aerosol cans or manual spray bottles. Also, use of solvent pumped from one closed container to another to flush adhesive delivery lines.
- (k) One (1) barrier reclaim unit, consisting of two (2) grinders, two (2) cyclones, two (2) fans and one (1) static separator, having a maximum capacity of 550 pounds of scrap material input per hour. This unit contains no emission control equipment.

Stack Summary

Stack ID	Operation	Height (feet)	Diameter (feet)	Flow Rate (acfm)	Temperature (°F)
Mold Cell #7 2 stacks	Mold Cell #7	33	2 each 0.5	5,000 each	room temperature

Recommendation

The staff recommends to the Commissioner that the construction and operation be approved. This recommendation is based on the following facts and conditions:

Unless otherwise stated, information used in this review was derived from the application and additional information submitted by the applicant.

A complete application for the purposes of this review was received on December 3, 1999.

Emission Calculations

- (a) Natural Gas Combustion: See Pages 1 and 2 of the TSD Appendix A
- (b) Seven Molding Cells Emissions:
Pursuant to CP 127-6314, issued on September 5, 1996, the emission factor (Ef) of 0.0033 lb VOC/ton polyurethane foam used in the emission calculations was based from testing done by the company.

$$\begin{aligned}\text{VOC} &= 9,601.2 \text{ lb/hr} * \text{ton}/2000 \text{ lb} * 0.0033 \text{ lb/ton} * 8760 \text{ hr/yr} * \text{ton}/2000 \text{ lb} \\ &= 0.07 \text{ ton/year}\end{aligned}$$

- (c) Conveyorized Adhesive Spray Line Emissions:

Based on an engineering prototype testing of the new system and the existing system. VOC emissions have three components. First, there is a very small amount of Methyl Diisocyanate (MDI) evaporated. The second component is the evaporating of dibasic ester during the purge operation. The last component is the peelable wall coating, used for housekeeping purposes. This material was not used during the tests and will be added to the emissions measured during the tests.

- (1) MDI Emissions: - The emission calculation was based on the guide published by the Society of the Plastic Industry:

The spray line uses an adhesive called polyurethane foam applied to the plastic headliners. This material is a mixture of 45% Methyl Diisocyanate (MDI) and 55% polymerized MDI (PMDI). **MDI is a VOC and a hazardous air pollutant (HAP).**

Given:

Largest part area to be sprayed = 1.46 m x 2.87 m

Rate of adhesive application = 60 grams/square meter

Maximum production rate = 60 parts/hr

"Tack free" temperature = 160 °F, time that no more unreacted MDI is present in the adhesive polyurethane foam

"Tack free" (μ) across coated surfaces in 3 meters/sec

$$W = \frac{(25.4)(P_T^{\circ})(M_T)(\mu^{0.78})(A)}{T}$$

Where:

W = the evaporation rate in grams/second
 P_T° = the vapor pressure in atmosphere
 M_T = average molecular weight (for MDI: $M_T = 250$)
 T = temperature in degrees Kelvin
 μ = air speed across curing foam in M/sec
 A = is exposed area in square meters

$$W = \frac{(25.4)(P_T^{\circ})(M_T)(\mu^{0.78})(A)}{T}$$

$$P_T^{\circ} = \frac{(VP \text{ mmHg})}{\text{barometric pressure}} = \frac{1 \times 10^{-3}}{760} = 1.3 \times 10^{-6}$$

$VP = 1 \times 10^{-3}$
barometric pressure = 760 mmHg

Adhesive is applied on both sides of the largest part area:

$$A = 2 (1.46 \text{ meter}) (2.87 \text{ meter}) = 8.38 \text{ M}^2$$

$$T = 160^{\circ}\text{F} = 70^{\circ}\text{C} = 343^{\circ}\text{K}$$

$$W = \frac{(25.4)(P_T^{\circ})(M_T)(\mu^{0.78})(A)}{T}$$

$$= \frac{(25.3)(1.3 \times 10^{-6})(250)(3^{0.78})(8.38)}{343}$$

$$= 0.00048 \text{ gram/sec}$$

$$\text{VOC Emissions} = (0.00048 \text{ gram/sec}) (60 \text{ sec/min}) (1 \text{ min/part})$$

$$= 0.029 \text{ gram per part (This emission is both for MDI \& PMDI)}$$

$$\text{MDI} = 45\% \text{ PMDI} = 55\%$$

$$\text{MDI Emissions} = (0.029 \text{ gram/part}) * (45\%/100) * (60 \text{ parts/hr}) * (\text{lb}/454 \text{ grams}) * (8760 \text{ hr/yr})$$

$$= 0.01 \text{ ton/yr}$$

$$= 0.002 \text{ lb/hr}$$

Tests data shows total VOC emissions rate of 0.14 lb/hr for prototype test at 38.7 parts/hr and prorates to 0.22 lb/hr for proposed rate of 60 parts/hour.

(2) Dibasic Ester Emissions - No component of this solvent mixed used, is one of the listed HAPs.

(3) Peelable Wall Coating Emissions - The peelable wall coating called 30-FT will be applied intermittently in order to remove built up adhesive from the booth. The maximum amount of this material contains prorated per piece is 0.0009 gal/piece. The MSDS shows that this material contains 1.5 lb/gal VOC. It is applied with a HVLP gun. The VOC emission is calculated as follows:

$$\begin{aligned}\text{VOC Emission} &= 0.0009 \text{ gal/piece} * 1.5 \text{ lb VOC/gal} * 60 \text{ pieces per hour} \\ &= 0.081 \text{ lb/hr}\end{aligned}$$

$$\begin{aligned}\text{Conveyorized Adhesive Spray Line Total VOC Emissions} &= 0.22 \text{ lb/hr} + 0.081 \text{ lb/hr} \\ &= 0.30 \text{ lb/hr} * 8760 \text{ hr/yr} \\ &\quad * \text{ton/2000 lb} \\ &= 1.3 \text{ ton/yr}\end{aligned}$$

Conveyorized Adhesive Spray Line Total PM Emissions: From the test data the average PM emissions (prorated from 38.7 parts/hour to 60 parts/hour) is 2.45 lb/hr from the two booths.

$$\begin{aligned}\text{PM Emissions Uncontrolled} &= 2.45 \text{ lb/hr} * 8760 \text{ hr/yr} * \text{ton/2000 lb} \\ &= 10.7 \text{ ton/yr}\end{aligned}$$

$$\begin{aligned}\text{PM Emissions Controlled} &= 0.37 \text{ lb/hr} * 8760 \text{ hr/yr} * \text{ton/2000 lb} \\ &= 1.6 \text{ ton/yr}\end{aligned}$$

(d) Trim Press:
There are no PM emissions from this process.

(e) Lamination Press:
Plastic sheet is used in the lamination process, which does not involve heating. The plastic is mechanically crimped into the product and no VOC nor PM is emitted.

(f) Barrier Reclaim Process Emissions:

The scrap material first goes through the grinders. Material from the grinders is mostly a loose granular material, the average granule size is about a millimeter across, but it has a certain amount of dry powdery residue sticking to the surface of the granules. The material taken from the grinder was analyzed for it size, as follows:

Particles < 10 microns:	0.02% by weight
Particles < 100 microns:	0.16% by weight
Particles > 100 microns:	99.84% by weight

Since particles having diameter of greater than 100 microns are not considered to be particulate matter, they will not be further considered in this calculations.

This process has two cyclones associated with it. These cyclones separate the "powder" from the larger granules, directing the powder into a hopper for collection and disposal. The larger granules are then separated for reclamation at another plant or disposal at the landfill. Since the larger particles are the output of this process, only part of the smaller particles that penetrate the cyclones can be considered as part of the potential emission.

Cyclone Efficiency :
10 microns < diameter < 100 microns (PM): 50%
Diameter <10 microns (PM10): 1%

Emission from the First Cyclone:
 $PM = 550 \text{ lb/hr} * 0.16\% * 50\% = 0.44 \text{ lb/hr}$

$PM10 = 550 \text{ lb/hr} * 0.02\% * 99\% = 0.11 \text{ lb/hr}$

Emission from the Second Cyclone:
 $PM = 225 \text{ lb/hr} * 0.16\% * 50\% * 50\% = 0.09 \text{ lb/hr}$

$PM10 = 225 \text{ lb/hr} * 0.02\% * 99\% * 99\% = 0.04 \text{ lb/hr}$

Total Emission:
 $PM = 0.44 \text{ lb/hr} + 0.09 \text{ lb/hr} = 0.53 \text{ lb/hr} * 8760 \text{ hr/yr} * \text{ton}/2000 \text{ lb}$
 $= 2.3 \text{ ton/yr}$

$PM10 = 0.11 \text{ lb/hr} + 0.04 \text{ lb/hr} = 0.15 \text{ lb/hr} * 8760 \text{ hr/yr} * \text{ton}/2000 \text{ lb}$
 $= 0.7 \text{ ton/yr}$

- (g) Parts Washer Emission:
Worst case or maximum solvent usage per day is 1 gallon

$VOC \text{ Emission} = 1 \text{ gal/day} * 6.54 \text{ lb/gal} * 100\% \text{ VOC} * 100\% \text{ flash off} * 365 \text{ days/yr}$
 $* \text{ton}/2000 \text{ lb}$
 $= 1.2 \text{ ton/yr}$

Washer solvent used contains none of the listed HAPs.

- (h) Miscellaneous Product Usages:

(1) General Purpose Adhesive -
Density 6.67 lb/gal
Maximum Usage Rate: 0.036 gal/hr
VOC Content: 80% by weight
Solids Content: 10% by weight
HAP Content: 30% hexane by weight

$VOC \text{ Emission} = 0.036 \text{ gal/hr} * 6.67 \text{ lb/gal} * 80\% * 100\% \text{ flash off}$
 $= 0.19 \text{ lb/hr} * 8760 \text{ hr/yr} * \text{ton}/2000 \text{ lb}$
 $= 0.84 \text{ ton/yr}$

$Hexane \text{ Emission} = 0.036 \text{ gal/hr} * 6.67 \text{ lb/gal} * 30\% * 100\% \text{ flash off}$
 $= 0.07 \text{ lb/hr} * 8760 \text{ hr/yr} * \text{ton}/2000 \text{ lb}$
 $= 0.31 \text{ ton/yr}$

$PM \text{ Emission} = 0.036 \text{ gal/hr} * 6.67 \text{ lb/gal} * (1\text{-wt \% VOC, 80\%}) * (1\text{-transfer eff., 75\%}) *$
 $8760 \text{ hr/yr} * \text{ton}/2000 \text{ lb}$
 $= 0.05 \text{ ton/yr}$

(2) SD20 Cleaner:
Density 8.34 lb/gal
Maximum Usage Rate: 0.046 gal/hr
VOC Content: 91% by weight

Solids Content: 1% by weight

$$\begin{aligned}\text{VOC Emission} &= 0.046 \text{ gal/hr} * 8.34 \text{ lb/gal} * 91\% \text{ VOC} * 100\% \text{ flash off} * 8760 \text{ hr/yr} \\ &\quad * \text{ton/2000 lb} \\ &= 1.5 \text{ ton/yr}\end{aligned}$$

$$\begin{aligned}\text{PM Emission} &= 0.046 \text{ gal/hr} * 8.34 \text{ lb/gal} * (1\text{-wt \% VOL, } 91\%) * (1\text{-transfer eff.,} \\ &\quad 75\%) * 8760 \text{ hr/yr} * \text{ton/2000 lb} \\ &= 0.04 \text{ ton/yr}\end{aligned}$$

- (3) L-219W Water Based Mold Release
- | | |
|---------------------|---------------|
| Density | 8.34 lb/gal |
| Maximum Usage Rate: | 0.056 gal/hr |
| VOC Content: | 0% by weight |
| Solids Content: | 10% by weight |
| Weight % Volatiles | 90% |

$$\begin{aligned}\text{PM Emission} &= 0.056 \text{ gal/hr} * 8.34 \text{ lb/gal} * (1\text{-wt \% VOL, } 90\%) * (1\text{-transfer eff.,} \\ &\quad 75\%) * 8760 \text{ hr/yr} * \text{ton/2000 lb} \\ &= 0.05 \text{ ton/yr}\end{aligned}$$

- (4) L-239W Water Based Mold Release
- | | |
|---------------------|---------------|
| Density | 8.34 lb/gal |
| Maximum Usage Rate: | 0.199 gal/hr |
| VOC Content: | 0% by weight |
| Solids Content: | 10% by weight |
| Weight % Volatiles | 90% |

$$\begin{aligned}\text{PM Emission} &= 0.199 \text{ gal/hr} * 8.34 \text{ lb/gal} * (1\text{-wt \% VOL, } 90\%) * (1\text{-transfer eff.,} \\ &\quad 75\%) * 8760 \text{ hr/yr} * \text{ton/2000 lb} \\ &= 0.18 \text{ ton/yr}\end{aligned}$$

- (5) L-319W Water Based Mold Release
- | | |
|---------------------|---------------|
| Density | 8.34 lb/gal |
| Maximum Usage Rate: | 6.94 gal/hr |
| VOC Content: | 0% by weight |
| Solids Content: | 15% by weight |
| Weight % Volatiles | 85% |

$$\begin{aligned}\text{PM Emission} &= 6.94 \text{ gal/hr} * 8.34 \text{ lb/gal} * (1\text{-wt \% VOL, } 85\%) * (1\text{-transfer eff.,} \\ &\quad 75\%) * 8760 \text{ hr/yr} * \text{ton/2000 lb} \\ &= 9.5 \text{ ton/yr}\end{aligned}$$

- (6) Adhesive Line Cleaner:
This "adhesive line cleaner" solvent is being pumped from one closed container to another through the piping and tubing it is used to clean. The solvent is re-used numerous times until it is saturated with adhesive at which time the saturated solvent is disposed of or re-fined. An identical operation in another state manifests away for disposal 95% of the original mass of solvent.

Density	7.5 lb/gal
Maximum Usage Rate:	0.125 gal/hr
VOC Content:	100% by weight
Solids Content:	0% by weight

$$\begin{aligned}\text{VOC Emission} &= 0.125 \text{ gal/hr} * 7.50 \text{ lb/gal} * 100\% \text{ VOC} * 5\% \text{ flash off} * \\ &\quad 8760 \text{ hr/yr} * \text{ton/2000 lb} \\ &= 0.2 \text{ ton/yr}\end{aligned}$$

- (7) Mold Cleaner:
VOC Emission = 0.134 gal/hr * 8.34 lb/gal * 0.77 S.G.
= 0.86 lb/hr * 8760 hr/yr * ton/2000 lb
= 3.8 ton/yr

SUMMARY OF EMISSIONS (TON/YR)								
Pollutant	Natural Gas Combustion	Mold Cells	Adhesive Spray Line Uncontrolled Controlled		Barrier Reclaim	Parts Washer	Miscellaneous Product Usage	TOTAL EMISSIONS
PM	0.1		10.7	1.6	2.3		9.82	22.92
PM10	0.5		10.7	1.6	0.7		9.82	21.72
VOC	0.5	0.07	1.3			1.2	6.34	9.41
CO	7.7							7.7
NOx	9.2							9.2
SO2	0.0							0.0
MDI	0.0		0.01					0.01
Hexane	0.0						0.31	0.31

Potential To Emit

Pursuant to 326 IAC 2-1.1-1(16), Potential to Emit is defined as “the maximum capacity of a stationary source or emissions unit to emit any air pollutant under its physical and operational design. Any physical or operational limitation on the capacity of a source to emit an air pollutant, including air pollution control equipment and restrictions on hours of operation or type or amount of material combusted, stored, or processed shall be treated as part of its design if the limitation is enforceable by the U. S. EPA, the department, or the appropriate local air pollution control agency.”

Pollutant	Potential To Emit (tons/year)
PM	22.61
PM-10	21.72
SO ₂	0.0
VOC	9.41
CO	7.7
NO _x	9.2

HAP's	Potential To Emit (tons/year)
Methyl Diisocyanate	0.01
Hexane	0.31
TOTAL	0.32

- (a) The potential to emit (as defined in 326 IAC 2-7-1(29)) of volatile organic compounds (VOC) are less than 25 tons per year, for source located in Porter County, which is severe nonattainment for ozone. Therefore, the source is not subject to the provisions of 326 IAC 2-7, and Emission Offset Rules 326 IAC 2-3.

or

- (b) The potential to emit (as defined in 326 IAC 2-7-1(29)) of any single HAP is equal to or less than ten (10) tons per year and the potential to emit (as defined in 326 IAC 2-7-1(29)) of a combination HAPs is less than twenty-five (25) tons per year. Therefore, the source is not subject to the provisions of 326 IAC 2-7.

Justification for the Level of Approval

The source is re-permitted, based on the new permitting rules requirements, 326 IAC 2-1.1. All the air permits issued to the source are superseded by this proposed air approval.

Pursuant to 326 IAC 2-5.1-2, the source will be issued a Registration, since the potential to emit (PTE) plantwide of Particulate Matter (PM), and Particulate Matter less than 10 microns (PM₁₀) are each greater than 5 tons per year but less than 25 tons per year (see PTE on page 7 of this TSD).

Limited Potential to Emit

The table below summarizes the total potential to emit, reflecting all limits, of the significant emission units.

	Limited Potential to Emit (tons/year)						
Process/facility	PM	PM-10	SO ₂	VOC	CO	NO _x	HAPs
Natural Gas Combustion	0.1	0.5	0.0	0.5	7.7	9.2	0.0
Mold Cells	-	-	-	0.07	-	-	-
Adhesive Spray Line	10.7	10.7	-	1.3	-	-	0.01
Barrier Reclaim	2.3	0.7	-	-	-	-	-
Parts Washer	-	-	-	1.2	-	-	-
Miscellaneous Product Usage	9.82	9.82	-	6.34	-	-	0.31
Total Emissions	22.61	21.72	0.0	9.41	7.7	9.2	0.32

County Attainment Status

The source is located in Porter County.

Pollutant	Status (attainment, maintenance attainment, or unclassifiable; severe, moderate, or marginal nonattainment)
PM-10	unclassifiable
SO ₂	unclassifiable
NO ₂	severe
Ozone	severe
CO	attainment
Lead	not determined

- (a) Volatile organic compounds (VOC) and oxides of nitrogen are precursors for the formation of ozone. Therefore, VOC and NO_x emissions are considered when evaluating the rule applicability relating to the ozone standards. Porter County has been designated as severe nonattainment for ozone. Therefore, VOC and NO_x emissions were reviewed pursuant to the requirements for Emission Offset, 326 IAC 2-3.
- (b) Porter County has been classified as attainment for all the other criteria pollutants. Therefore, these emissions were reviewed pursuant to the requirements for the Prevention of Significant Deterioration (PSD), 326 IAC 2-2.

Source Status

New Source PSD Definition (emissions after controls, based on 8,760 hours of operation per year at rated capacity and/ or as otherwise limited):

Pollutant	Emissions (ton/yr)
PM	22.61
PM10	12.62
SO ₂	0.0
VOC	9.41
CO	7.7
NO _x	9.2
Single HAP	0.01
Combination HAPs	0.32

- (a) This new source is **not** a major stationary source because VOC or NO_x both severe nonattainment pollutant are not emitted at a rate of 25 tons per year or greater. Therefore, pursuant to 326 IAC 2-3, the Emission Offset requirements do not apply.

and

- (b) This new source is **not** a major stationary source because PM, PM10, SO₂, and CO, all attainment pollutant are not emitted at a rate of 250 tons per year or greater and it is not in one of the 28 listed source categories. Therefore, pursuant to 326 IAC 2-2, and 40 CFR 52.21, the PSD requirements do not apply.

Part 70 Permit Determination

326 IAC 2-7 (Part 70 Permit Program)

This new source is not subject to the Part 70 Permit requirements because the potential to emit (PTE) of:

- (a) each criteria pollutant is less than 100 tons per year,
- (b) a single hazardous air pollutant (HAP) is less than 10 tons per year, and
- (c) any combination of HAPs is less than 25 tons/year.

This is the first air approval issued to this source.

Federal Rule Applicability

- (a) New Source Performance Standards (NSPS)
40 CFR Part 60.110b, Subpart Kb - Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Storage Vessels) for which Construction, Reconstruction or Modification Commenced after July 23, 1984.

Section (a) of this NSPS applies to VOL vessels, with a capacity greater than or equal to 40 cubic meters (m³) (10,567 gallons).

- (1) The two (2) 6,000 gallon bulk organic storage tanks are **not subject** to this NSPS, because their capacity are less than 40 cubic meters (m³) (10,567 gallons).
- (2) The two (2) 11,000 gallon bulk organic storage tanks **are subject** to this NSPS, because their capacity are greater than 40 cubic meters (m³) (10,567 gallons), but less than 75 cubic meters (19,813 gallons). They are subject to the "Monitoring of Operation" requirement of Part 60.116b(b). This rule requires the owner or operator of these storage vessels to keep readily accessible records showing their dimensions and an analysis showing their capacity for the life of the source.

There are no other New Source Performance Standards (326 IAC 12) and 40 CFR Part 63 applicable to this facility.

- (b) National Emission Standards for hazardous Air Pollutants
There are no NESHAPs that will apply to this facility nor any NESHAP scheduled to be promulgated that will apply to this facility.

State Rule Applicability

- (a) 326 IAC 2-3 (Emission Offset)
The source is not subject to this rule, because its severe nonattainment pollutant, NOx and VOC, are emitted at less than 25 tons per year.
- (b) 326 IAC 2-6 (Emission Reporting)
This facility **is not subject** to 326 IAC 2-6 (Emission Reporting), because the source, which is located in Porter County emits less than 10 tons/yr of VOC.
- (c) 326 IAC 8-1-6 (General Reduction Requirements)
The adhesive spray line, is not be subject to this rule, because its total VOC emissions of 1.3 tons/year is well below the 25 tons/year.
- (d) 326 IAC 8-7 (Specific VOC Reduction Requirements For Lake, Porter, Clark, and Floyd Counties). This rule applies to sources located in these counties that have the potential to emit (PTE) VOC at levels equal to or greater than 25 tons per year. This rule shall also apply to sources that have coating facilities which emit or have the PTE of 10 tons of VOC per year or greater.

The source has no PTE of 25 tons per year of VOC, and although it has a coating facility (adhesive line), this facility does not have a PTE of 10 tons of VOC per year. The rule therefore, is not applicable to the source.

- (e) 326 IAC 8-6-1 (Organic Solvent Emission Limitation)
The proposed facilities do not emit potential VOC emissions of 100 ton per year. Therefore, this rule does not apply.
- (f) 326 IAC 8-9 (Volatile Organic Storage Vessels)
This rule applies to stationary vessels used to store volatile organic liquid (VOL) that are located in Clark, Floyd, Lake or Porter County, and with a capacity less than thirty-nine thousand (39,000) gallons, and with a capacity equal to or greater than thirty-nine thousand (39,000) gallons, that store a VOL with a maximum true vapor pressure equal to or greater than five-tenths (0.5) pounds per square inch absolute (psia) but less than seventy-five hundredths psia.
 - (1) This rule is not applicable to the two (2) 11,000 gallon bulk organic storage tanks, because they are subject to 40 CFR 60, Subpart Kb, New Source Performance Standards for VOL storage. Being subject to this NSPS, exempts these tanks from being subject to the requirements of 326 IAC 8-9 (see section 2 of this rule).
 - (2) The two (2) 6,000 gallon bulk organic storage tanks are subject to the reporting and record keeping provisions of section 6(a) and 6(b) of this rule. This rule requires the owner to keep records showing the vessels identification number; dimensions, and capacity for the life of the source.
- (g) No other 8 rule will apply to these facilities because they do not fit any of the processes described in 326 IAC 8.

(h) 326 IAC 6-3 (Particulate Matter)

- (1) The PM overspray from the adhesive spray line will be determined using the following equation:

$$E = 4.10 P^{0.67}$$

Where:

E = PM emission limit in pounds per hour (lb/hr)

P = Process weight rate in ton/hour

The dry filters are used to comply with 326 IAC 6-3.

- (2) The Barrier Reclaim process is subject to this rule, 326 IAC 6-3. This rule limits the PM emissions using the following equation:

$$\begin{aligned} E &= 4.10 P^{0.67} \\ &= 4.19 (0.275)^{0.67} \\ &= 1.76 \text{ lb/hr} \end{aligned}$$

This process is in compliance since its PM emission of 0.53 lb/hr is less than the allowable.

(h) 326 IAC 8-3: (Organic Solvent Degreasing Operations)

This rule applies to any facility, construction of which commences after January 1, 1980, performing solvent degreasing operations located anywhere in the state.

The parts washer, which is a cold cleaner with remote reservoir is subject to Section 2 of this rule, since it should have been constructed in 1996, because it was part of the facilities in Registration 127-6314, issued in 1996.

The owner or operator of a cold cleaner facility shall:

- (1) equip the cleaner with a cover;
- (2) equip the cleaner with a facility for draining cleaned parts;
- (3) close the degreaser covers whenever parts are not being handles in the cleaner;
- (4) drain cleaned parts for at least fifteen (15) seconds or until dripping ceases;
- (5) provide a permanent, conspicuous label summarizing the operating requirements;
- (6) store waste solvent only in covered container and not dispose of waste solvent or transfer it to another party, in such a manner that greater than twenty percent (20%) of the waste solvent (by weight) can evaporate into the atmosphere.

- (i) 326 IAC 6-2 (Indirect Heating Facility)
The various natural gas-fired heaters are not subject to this rule, because they are not sources of indirect heating. This reverses the determination made in Registration 127-6314, issued on September 5, 1996.
- (j) 326 IAC 2-4.1-1 (New Source Toxic Control)
This rule is not applicable to the source, because it is not major for single or combined HAPs.

Air Toxic Emissions

Indiana presently requests applicants to provide information on emissions of the 189 hazardous air pollutants set out in the Clean Air Act Amendments of 1990. These pollutants are either carcinogenic or otherwise considered toxic and are commonly used by industries. They are listed as air toxics on the Office of Air Management (OAM) Construction Permit Application Form Y.

- (a) This modification will emit levels of air toxics less than those which constitute a major source according to Section 112 of the 1990 Amendments to Clean Air Act.
- (b) See page 3 of this TSD for the detailed air toxic emission calculations.

Conclusion

The modification of the plant which manufacture automotive polyurethane foam composite part/plastic headliner will be subject to the conditions of the attached proposed **Registration 127-11623-00072**.

Appendix A: Emissions Calculations
Natural Gas Combustion Only
MM BTU/HR <100
Small Industrial Boiler

Company Name: UGN, Incorporated
Address City: 2252 Industrial Dr., Valparaiso, IN
Registration: 127-11623
Pit ID: 127-00072
Reviewer: Aida De Guzman
Date: Dec. 9, 1999

Various nat. gas-fired heaters
w/ total heat input capacity
of 15.33 mmBtu/hr

Heat Input Capacity
MMBtu/hr

Potential Throughput
MMCF/yr

15.3

134.3

Pollutant						
Emission Factor in lb/MMCF	PM*	PM10*	SO2	NOx	VOC	CO
	1.9	7.6	0.6	100.0 **see below	5.5	84.0
Potential Emission in tons/yr	0.1	0.5	0.0	6.7	0.4	5.6

*PM emission factor is filterable PM only. PM10 emission factor is filterable and condensable PM10 combined.

**Emission Factors for NOx: Uncontrolled = 100, Low NOx Burner = 50, Low NOx Burners/Flue gas recirculation = 32

Methodology

All emission factors are based on normal firing.

MMBtu = 1,000,000 Btu

MMCF = 1,000,000 Cubic Feet of Gas

Potential Throughput (MMCF) = Heat Input Capacity (MMBtu/hr) x 8,760 hrs/yr x 1 MMCF/1,000 MMBtu

Emission Factors are from AP 42, Chapter 1.4, Tables 1.4-1, 1.4-2, 1.4-3, SCC #1-02-006-02, 1-01-006-02, 1-03-006-02, and 1-03-006-03 (SUPPLEMENT D 3/98)

Emission (tons/yr) = Throughput (MMCF/yr) x Emission Factor (lb/MMCF)/2,000 lb/ton
above
emission

Appendix A: Emissions Calculations
Natural Gas Combustion Only
MM BTU/HR <100
Small Industrial Boiler

Company Name: UGN, Incorporated
Address: 2252 Industrial Dr., Valparaiso, IN
Registration: 127-11623
Pit ID: 127-00072
Reviewer: Aida De Guzman
Date: Dec. 9, 1999

2 air make-up units w/ total heat
input capacity of 5.775 mmBtu/hr

Heat Input Capacity
MMBtu/hr

Potential Throughput
MMCF/yr

5.8

50.6

Pollutant						
Emission Factor in lb/MMCF	PM* 1.9	PM10* 7.6	SO2 0.6	NOx 100.0 **see below	VOC 5.5	CO 84.0
Potential Emission in tons/yr	0.0	0.2	0.0	2.5	0.1	2.1

*PM emission factor is filterable PM only. PM10 emission factor is filterable and condensable PM10 combined.

**Emission Factors for NOx: Uncontrolled = 100, Low NOx Burner = 50, Low NOx Burners/Flue gas recirculation = 32

Methodology

All emission factors are based on normal firing.

MMBtu = 1,000,000 Btu

MMCF = 1,000,000 Cubic Feet of Gas

Potential Throughput (MMCF) = Heat Input Capacity (MMBtu/hr) x 8,760 hrs/yr x 1 MMCF/1,000 MMBtu

Emission Factors are from AP 42, Chapter 1.4, Tables 1.4-1, 1.4-2, 1.4-3, SCC #1-02-006-02, 1-01-006-02, 1-03-006-02, and 1-03-006-03 (SUPPLEMENT D 3/98)

Emission (tons/yr) = Throughput (MMCF/yr) x Emission Factor (lb/MMCF)/2,000 lb/ton
above
emission